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EXAMINER	
BELYAVSKYI, MICHAIL A	

ART UNIT	PAPER NUMBER
1644	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/658,621	TAYLOR-PAPADIMITRIOU ET AL.	
	Examiner	Art Unit	
	Michail A Belyavskyi	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33 and 35 -56* is/are pending in the application.

4a) Of the above claim(s) *See Continuation Sheet* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-2, 3 (f), 17, 18, 20-22 , 37, 38, 39 (f) , 40, 41, 49, 51-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims withdrawn from consideration are 3 ((a - e) and (g)), 4 -16 , 19 ,23-33, 35-36, 39 ((a-e) and (g)), 42-48 and 50 .

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/19/04 has been entered.

Claims 1-33 and 35 -56 are pending.

2. Newly submitted claim 39 ((a-e) and (g)), 42-48 and 50 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The invention of the elected group XXV, claims 1-2, 3 (f), 17, 18, 20-22 and 37, now claims 1-2, 3 (f), 17, 18, 20-22 , 37, 38, 39 (f) , 40,41, 49, 51-56 drawn to a polypeptide comprising SEQ ID NO:26 . The invention of newly added claims 39 ((a-e) and (g)), 42-48 and 50 drawn to different polypeptide comprising different SEQ ID NOs. These inventions are differ with respect to their structures and physicochemical properties of claimed polypeptide, which require non-coextensive searches; therefore each product is patentably distinct.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 35 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

3. Claims 3 ((a – e) and (g)), 4 –16 , 19 ,23-33, 35-36, 39 ((a-e) and (g)), 42-48 and 50 are withdrawn from further consideration by the Examiner, 37 C.F.R. § 1.142(b) as being drawn to a nonelected invention.

Claims 1-2, 3 (f), 17, 18, 20-22 , 37, 38, 39 (f) , 40, 41, 49, 51-56 read on a polypeptide comprising SEQ ID NO:26 under consideration in the instant application

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-3, 17-18, 20- 22 , 37, , 38, 339, 40,41, 49, 51-56 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. **This is a New Matter rejection**.

"A polypeptide comprising at least one amino acid sequence of the most 20 and at least 8 consecutive amino acids" claimed in claim 1; "..a combination of two or more different polypeptides described by claim 1..", claimed in claim 17; " consisting essentially of" claimed in claim 38; ".. combination of two or more different polypeptides described by claim 38, claimed in claims 54 and 55 represent a departure from the specification. The passages pointed by the applicant only generally disclosed that the polypeptide is typically 8 to 2000 amino acids in length. This general statement does not provide a clear support for claimed "A polypeptide comprising at least one amino acid sequence of the most 20 and at least 8 consecutive amino acids defined in SEQ ID NO:1". The original claim 17 recited a composition comprising a polypeptide , an analog thereof, a polynucleotide, a vector , a host cell or a combination of two of these different compounds. This recitation does not provide a clear support for claimed "combination of two or more different polypeptides described by claim 1". Applicant has not pointed out where the support for " ...consisting essentially..." comes from. The specification and the claims as originally field only support " A polypeptide comprising at least one amino acid sequence of the most 20 consecutive amino acids ...". It is noted that newly added claim 38 does not recited said new matter.

6. Claims 1-3, 17, 18, 20-22 , 37-41, 49 and 51-56 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a polypeptide consisting of SEQ ID NOs: 3 to 33 and 65 and 66 , does not reasonably provide enablement for a: (i) any polypeptide comprising at least one amino acid sequence of at most 20 and at least 8 consecutive amino acid defined in SEQ ID NO: 1, as recited in claim 1; or (ii) any polypeptide comprising SEQ ID NOs: 3 to 33 and 65 and 66 , as recited in claim 2 or 3; or (iii) any composition, or any diagnostical composition or any vaccine or any kit comprising combination of any polypeptide of claim 1 or an analogue thereof, as recited in claims 17, 20, 21 and 37 accordingly ; or (iv) any vaccine comprising any polypeptide of claim 1 or an analogue of any polypeptide of claim 1, as recited in claim 21; or any polypeptide consisting essentially of one or more amino acid sequences of SEQ ID NOs: 3 to 33 and 65 and 66 wherein the

polypeptide has at most 20 consecutive amino acid defined in SEQ ID 1, as recited in claim 38 . The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims for the same reasons set forth in the previous Office Action, mailed 11/19/03.

Applicant's arguments, filed 04/19/04 have been fully considered, but have not been found convincing.

Applicant asserted that : (i) the specification enables one of skill to make and use any polypeptide of the genus described by claim1. Myriad representative examples are disclosed in individual or combinations of the example epitopes, (ii) it is appropriate use of the transition phrase 'comprising"; (iii) the specification provides working examples of a screening method to identify suitable polypeptides within the claim genus; (iv) in the example 6, vaccines comprising polypeptides that has been identified according to the methods taught by the specification demonstrated a protective effect in an art accepted mouse model of tumor growth and (v) even if certain polypeptides described in claim 1 were not operative as a vaccine, skilled practitioner would know how to interpret routine preliminary screens of polypeptide and to proceed with such further screening to identify functional vaccine.

The examiner disagrees with Applicant statement that "myriad representative examples are disclosed in individual or combinations of the example epitopes ". Contrary to Applicants assertion, as was stated in the previous Office Action, Applicant discloses a polypeptide comprising SEQ ID NO: 1 (495 residues) and a polypeptide consisting of amino acid residues of SEQ ID NOs: 3 to 33 and 65 and 66 in the instant specification , wherein said polypeptide binding at least one MHC-I glycoprotein.(see page 7 in particular). Applicant has not provided sufficient biochemical information (e.g. molecular weight, amino acid composition, N-terminal sequence, etc.) that distinctly identifies "any analogs" or any polypeptide "comprising" or consisting essentially" sequences of 8-20 sequential amino acids derived from SEQ ID NO:1 other than polypeptide consisting of amino acid residues of SEQ ID NOs: 3 to 33 and 65 and 66 that are capable of binding at least one MHC-I glycoprotein.

It is noted that Applicant define the function of the disclosed polypeptide, i.e. the ability to bind at least one MHC-I glycoprotein. However, these do not obviate the issues of enablement rejection set forth in previous Office Action, mailed 11/19/03. Applicant is relying upon certain biological activities and the disclosure of a limited species to support an entire genus. The claims as written encompass a broad genus of polypeptides with an unlimited number of possibilities with regard to the length of the polypeptide sequence. Further, the enablement issues of making the protein still remain because the specification does not teach and provide sufficient guidance as to which amino acid of 8-20 sequential amino acids derived from SEQ ID NO:1 or an analog thereof would have been altered such that the resultant polypeptide would have retained the function of binding at least one MHC-I glycoprotein. For instance, the length of the peptide is important for binding to MHC-I glycoprotein, HLA (along with the presence of anchor (or "motif") amino acid residues present within the peptide). The peptides that bind to class I

molecules have a predominant length. A primary factor for this is that amino acid residues at the amino- and carboxy-termini of peptides binding to class I molecules interact with conserved amino acid residues in pockets ("A","F") located at opposite ends of the binding groove of the class I molecule, giving rise to a common orientation of the peptides in the binding site (Engelhard, Curr Opin Immunol. 6(1):13-23, 1994, at page 14, column 1, lines 16-27.) Thus, the amino acid residues at the peptides' termini make a network of hydrogen bonds with conserved residues on the sides and bottom of the peptide binding groove of class I molecules. These interactions are important for holding the peptides in the binding groove and for stabilizing the complex (Guo, et al, Nature. 360(6402):364-366, 1992, at page 366, column 1 lines 1-10.) "...the preferred length (of the peptide) is determined by the minimum amount of peptide required to span the center of the binding site and optimize the interactions at the ends." (Engelhard at page 14, column 1, lines 23-27.) The minimum amount of peptide required to span the binding groove and make favorable contacts with their N-and C-termini may be dependent upon the sequence of the peptide itself since different amino acid residues have different physicochemical properties, and may be dependent upon the identity of the additional amino acids, since these residues may make a negative contribution to binding. Accordingly, there is a high level of unpredictability in designing/selecting longer sequences that would still maintain binding function, and applicant does not provide direction or guidance to do Moreover, Applicant himself acknowledge that it is not possible to predict which protein will enter the antigen processing pathway, which fragments will be produced, or which fragment will bind to MHC-I glycoprotein. Additionally it is not possible to predict which fragments T cell will recognize and whether the T cell which recognize the fragment will be protective (see page 2, third paragraph in particular).

Since the instant fact pattern fails to indicate that representative number of structurally related compounds is disclosed, the artisan would not know the identity of a reasonable number of representative compounds falling within the scope of the instant claims and consequently would not know how to make them. An assay for *finding* (screening) a product is not equivalent to a positive recitation of *how to make* a product.

Therefore, absent the ability to predict which of these peptides would function as claimed, and given the lack of data on regions critical for activity, for one of skill in the art to practice the invention as claimed would require a level of experimentation that is excessive and undue.

It is recognized in the prior art that the function of a protein depends on the sequence of its amino acids in a certain pattern, conformation of the protein due to the amino acid sequence and the functional properties of the different parts of the protein. The specification does not teach which changes in amino acid of 8-20 sequential amino acids derived from SEQ ID NO:1 or an analog thereof would not alter all the activities of the peptide. Therefore, the specification fails to provide sufficient guidance as to which core structure of amino acid of 8-20 sequential amino acids derived from SEQ ID NO:1 or an analog thereof is essential for maintain its biological activity and which changes can be made in the structure of amino acid of 8-20 sequential amino acids derived from SEQ ID NO:1 or an analog thereof and still maintained the same function.

Since the amino acid sequence of a polypeptide determines its structure and functional properties, predictability of which changes can be tolerated in a polypeptide's amino acid sequence and still retain similar functionality (e.g. binding at least one MHC-I glycoprotein) requires a knowledge of, and guidance with regard to, which amino acids in the polypeptide's sequence, if any, are tolerant of modification and which are conserved (i.e. expectedly intolerant to modification) and detailed knowledge of the ways in which a polypeptide's structure relates to it's functional usefulness. However, the problem of predicting polypeptide structure from mere sequence data of a single amino acid sequence and in turn utilizing predicted structural determinations to ascertain functional aspects the peptides and finally, what changes can be tolerated with respect thereto is complex and well outside the realm of routing experimentation.

Therefore, structurally unrelated any polypeptide comprising or consisting essentially at least one amino acid sequence of at most 20 and at least 8 consecutive amino acid defined in SEQ ID NO: 1, as recited in claim 1; or (ii) any polypeptide comprising SEQ ID NOs: 3 to 33 and 65 and 66 , as recited in claim 2 or 3; or (iii) any composition, or any diagnostical composition or any vaccine or any kit comprising any polypeptide of claim 1, an analogue thereof, as recited in claims 17, 20, 21 and 37 accordingly ; or (iv) any vaccine comprising any polypeptide of claim 1 or an analogue of any polypeptide of claim 1, as recited in claim 21 or (v) any polypeptide consisting essentially of one or more amino acid sequences of SEQ ID NOs: 3 to 33 and 65 and 66 wherein the polypeptide has at most 20 consecutive amino acid defined in SEQ ID 1, as recited in claim 38 encompassed by the claimed invention other than "a polypeptide comprising SEQ ID NO: 1 (495 residues) and a polypeptide consisting of amino acid residues of SEQ ID NOs: 3 to 33 and 65 and 66" would be expected to have greater differences in their activities.

With regard to the issue of appropriate use of the transition phrase " comprising" and newly cited "consisting essentially". The examiner agrees that "comprising" is a term of art used in the claim language. However, the issue raised in the previous Office Action was that "comprising" and newly sited " consisting essentially" are considered open-ended claim language and includes amino acid residues outside of the specified peptide. Therefore, a peptide "comprising" or "consisting essentially" at least one amino acid sequence of at most 20 and at least 8 consecutive amino acid defined in SEQ ID NO: 1 as recited in claim 1, or (ii) any polypeptide comprising SEQ ID NOs: 3 to 33 and 65 and 66 , as recited in claim 2 or 3; or (iii) any composition, or any diagnostical composition or any vaccine or any kit comprising any polypeptide of claim 1, as recited in claims 17, 20, 21 and 37 accordingly; or (iv) any vaccine comprising an analogue of any polypeptide of claim 1, as recited in claim 21 or (v) any polypeptide consisting essentially of one or more amino acid sequences of SEQ ID NOs: 3 to 33 and 65 and 66 wherein the polypeptide has at most 20 consecutive amino acid defined in SEQ ID 1, as recited in claim 38 includes an unlimited number of amino acid sequences "comprising" an unlimited number of polypeptides and analogue. The disclosure of SEQ ID NOS: 2, 3 to 33 and 65 and 66 cannot support the entire genus of any polypeptide comprising at least one amino acid sequence of at most 20 and at least 7 consecutive amino acid defined in SEQ ID NO: 1, as recited in claim 1; or (ii) any polypeptide comprising SEQ ID NOs: 3 to 33 and 65 and 66 , as recited in claim 2; or (iii) any vaccine comprising an analogue of any polypeptide of claim 1, as

recited in claim 21, or (iv) any polypeptide consisting essentially of one or more amino acid sequences of SEQ ID NOs: 3 to 33 and 65 and 66 wherein the polypeptide has at most 20 consecutive amino acid defined in SEQ ID 1, as recited in claim 38 as part of their sequence that are capable to bind at least one MHC-I glycoprotein. A myriad of peptides is encompassed by the claims.

With regards to the issue that " in the example 6, vaccines comprising polypeptides that has been identified according to the methods taught by the specification demonstrated a protective effect in an art accepted mouse model of tumor growth".

Contrary to Applicants assertion, a close examination of the example 6 reveals that there was no protection effect of any vaccine comprising polypeptide of 7-20 sequential amino acids derived from SEQ ID NO:1 or an analogue thereof. For example, in experiment I $MUC1^{460-468}$ and MUC^{13-21} have little or no effect at al (see page 45 in particular). Moreover, Applicant himself acknowledge that not certain polypeptide described in Claim 1 were not operative as vaccine (see Applicant Response filed 09/02/03). At most, the example 6 reveals that very specific polypeptide disclosed in Experiment 1-3 (overlapping pages 45-46) were able to treat not protect specific type of melanoma.

With regards to the issue that "skilled practitioner would know how to interpret routine preliminary screens of polypeptide and to proceed with such further screening to identify functional vaccine".

Contrary to Applicants assertion , since the instant fact pattern fails to indicate that representative number of structurally related compounds is disclosed, the artisan would not know the identity of a reasonable number of representative compounds falling within the scope of the instant claims and consequently would not know how to make them. An assay for *finding* (screening) a product is not equivalent to a positive recitation of *how to make* a product.

Thus, Applicant has not provided sufficient guidance to enable one skill in the art to make and/or use claimed: any polypeptide comprising at least one amino acid sequence of at most 20 and at least 7 consecutive amino acid defined in SEQ ID NO: 1, as recited in claim 1; or (ii) any polypeptide comprising SEQ ID NOs: 3 to 33 and 65 and 66 , as recited in claim 2 or 3; or (iii) any composition, or any diagnostical composition or any vaccine or any kit comprising any polypeptide of claim 1, an analogue thereof, as recited in claims 17, 20, 21 and 37 accordingly ; or (iv) any vaccine comprising any polypeptide of claim 1 or an analogue of any polypeptide of claim 1, as recited in claim 21, or (v) any polypeptide consisting essentially of one or more amino acid sequences of SEQ ID NOs: 3 to 33 and 65 and 66 wherein the polypeptide has at most 20 consecutive amino acid defined in SEQ ID 1, as recited in claim 38 in manner reasonably correlated with the scope of the claims. The scope of the claims must bear a reasonable correlation with the scope of enablement. *In re Fisher*, 166 USPQ 18 (CCPA 1970)

indicates that the more unpredictable an area is, the more specific enablement is necessary in order to satisfy the statute.

In view of the quantity of experimentation necessary, the unpredictability of the art, the lack of sufficient guidance in the specification, the limited working examples, and the limited amount of direction provided given the breadth of the claims, it would take undue trials and errors to practice the claimed invention.

7 . Claims 17-18 stand rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention same reasons set forth in the previous Office Action, mailed 11/19/03.

Applicant's arguments, filed 04/19/04 have been fully considered, but have not been found convincing.

Applicant asserts that the specification describes a large number of representative species define by structures, chemical properties and functional characteristics that is more than sufficiently described the claimed genus.

Contrary to Applicants assertion, the specification fails to define **any** analog of a polypeptide comprising at least one amino acid sequence of most 20 and at lest 8 consecutive amino acids defined in SEQ ID NO:1 that capable binding at least one MHC-I glycoprotein. A description of what a material does rather than of what it is, usually does not suffice. The patent does not more than describe the desired function of the compound called for and contains no information by which a person of ordinary skill in the art would understand that the inventors possessed the claimed invention. At best, it simply indicates that one should run tests on a wide spectrum of compounds in the hope that at least one of them will work. A description of a protein by functional language in the absence of a structure is not considered sufficient to show possession of the claimed invention. See Fiers, 984 F.2d at 1169-71, 25 USPQ2D at 1605-06. It is only a definition of a useful result rather than a definition of what achieves that result. Many species may achieve that result. The definition requirement of the patent statute requires a description of an invention, not an indication of a result that one might achieve if one made that invention. See *In re Wilder*, 736 /f.2d 1516, 1521, 22 USPQ 369, 372-73 (Fed. Cir. 1984) affirming the rejection because the specification does "little more than outline[e] goals appellants hope the claimed invention achieves and the problems the invention will hopefully ameliorate.") Accordingly, naming a type of material generally known to exist, in the absence of knowledge as to what the material consists of (e.g. structural feature), is not a description of that material. The

claimed composition of matter defined only by its biological activity or function is insufficient to satisfy 35 U.S.C. 112, first paragraph.

Applicant is in possession of : a polypeptide consisting of SEQ ID NOs: 3 to 33 and 65 and 66.

Applicant is not in possession of : a composition comprising an analog of a polypeptide comprising at least one amino acid sequence of most 20 and at lest 8 consecutive amino acids defined in SEQ ID NO:1 that capable binding at least one MHC-I glycoprotein as recited in claim 17.

Applicant has disclosed a limited number of species; therefore, the skilled artisan cannot envision all the contemplated amino acid sequence possibilities recited in the instant claims. Consequently, conception in either case cannot be achieved until a representative description of the structural and functional properties of the claimed invention has occurred, regardless of the complexity or simplicity of the method. Adequate written description requires more than a mere statement that it is part of the invention. The sequences themselves are required. See Fiers v. Revel, 25 USPQ2d 1601, 1606 (CAFC 1993).

A description of a genus of analog of polypeptide sequences may be achieved by means of a recitation of a representative number of polypeptide sequences, defined by amino acid sequence, falling within the scope of the genus, or of a recitation of structural features common to the genus, which features constitute a substantial portion of the genus. Regents of the University of California v. Eli Lilly&Co., 119F3d 1559, 1569, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the written description inquiry, whatever is now claimed." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116.). Consequently, Applicant was not in possession of the instant claimed invention. See University of California v. Eli Lilly and Co. 43 USPQ2d 1398.
Applicant is directed to the Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1 "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:
A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-3, 17, 18, 20-22, 38, 39 and 49, are rejected under 35 U.S.C. 102(b) as being anticipated by Wrescshner (WO 9603502-A2) as evidenced by Rammensee et al. (Immunogenetics. 1995, 41, 178-228) for the same reasons set forth in the previous Office Action, mailed 11/19/03.

Applicant's arguments, filed 04/19/04 have been fully considered, but have not been found convincing.

Applicant asserts that: "although the sequence of SEQ ID NO:26 might be found within MUC1 proteins disclosed by WO'502, it will be noted that all polypeptides taught by WO'502 are larger proteins or substantial fragments of larger proteins". All such polypeptides of WO'502 have greater than twenty consecutive amino acid residues of SEQ ID NO:1. Therefore WO'502 does not teach a polypeptide comprising SEQ ID NO:26.

Contrary to Applicants assertion, the word "comprising" and "consisting essentially " are considered open-ended claim language and will open the claim to read on polypeptide taught by WO'502.

WO '502 teach a mucin-derived polypeptides and composition and vaccines comprising said polypeptides for the diagnosis, imaging and therapy of human cancer polypeptide (see entire document, Abstract in particular). WO '502 teach a polypeptide of SEQ ID NO 17, that is 100 % identical to the claimed SEQ ID NO:26 (see sequence alignment in particular). WO '502 teach a functional derivative of mucin-derived proteins of various length (see page 5 in particular). WO '502 teach a pharmaceutical composition comprising said polypeptide (see page 12 in particular.) WO '502 teach a cell culture transformed with a vector, comprising a polynucleotide encoding said proteins (see page 20 in particular). WO '502 teach a vaccine comprising said polypeptide and adjuvant which stimulate a MHC class I response. (see pages 45 –47 in particular).

The recitation that "said polypeptide binding at least one MHC I glycoproptein", as claimed in claim 1 is considered an inherent property of the reference polypeptide as evidence by Rammensee et al . Rammensee et al . teach a polypeptide motif that is essential for the said polypeptide to bind with MHC-I glycoprotein , (see entire document, table 2, page 192 in

particular). Rammensee et al . teach that for 9 mers for example such anchor motif (2 in most cases) should contain amino acid 'S" at position 2 and amino acid "Y" at position 9.
It is noted that the referenced polypeptide contained "S" at position 2 and "Y" at position "9" (see sequence alignment). Since the office does not have a laboratory to test the reference polypeptide, it is applicant's burden to show that the reference polypeptide do not bind to at least one MHC-I glycoprotein as recited in the claims. See *In re Best*, 195 USPQ 430, 433 (CCPA 1977); *In re Marosi*, 218 USPQ 289, 292-293 (Fed. Cir. 1983); *In re Fitzgerald et al.*, 205 USPQ 594 (CCPA 1980).

10. It is notes that the rejection under 35 U.S.C. 102(a) as being anticipated by WO'309 as evidenced by Rammensee et al. (Immunogenetics. 1995, 41, 178-228) has been withdrawn due to the amendment of claim 1. However, this rejection will be re-introduced when **a new matter** (at least 8 consecutive amino acids of SEQ ID NO:1) is deleted from the instant claims.

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

12. Claim 37 stand rejected under 35 U.S.C. 103(a) as being obvious over Wrescshner (WO 9603502-A2) as evidenced by Rammensee et al. (Immunogenetics. 1995, 41, 178-228) in view of Zuk et al. (U.S. Patent No. 4,281,061) for the same reasons set forth in the previous Office Action, mailed 11/19/03.

Applicant's arguments, filed 04/19/04 have been fully considered, but have not been found convincing.

Applicant asserted that since WO'502 is not the prior art, the combination of references do not teach or suggest every elements of the claimed invention.

Contrary to Applicants assertion, as has been discussed, supra, it is the examiner position that WO'502 is the prior art.

The teaching of WO'502 and Rammensee et al. have been discussed, supra.

WO'502 does not teach a kit comprising a polypeptide and adjuvant.

US Paten '061 teaches that reagents of the pharmaceutical compositions can be provided as kits as a matter of convenience , optimization and economy of the users (see col 22, line 62 - col 23, line 4 in particular).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the teaching of US Paten '061 to those of WO '502 to obtain a claimed kit comprising a polypeptide adjuvant.

One of ordinary skill in the art at the time the invention was made would have been motivated to do so, because assemble the reagents in a kit format a matter of convenience , optimization and economy of the users as taught by US Paten '061 and the components of the pharmaceutical compositions taught by WO '502 can be in a pack or a kit for convenience and economy.

From the combined teaching of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

13. Claims 40, 41 and 51 -56 are rejected under 35 U.S.C. 103(a) as being obvious over Wrescshner (WO 9603502-A2) as evidenced by Rammensee et al. (Immunogenetics. 1995, 41, 178-228) in view of US Patent 6,646137 and Whitton et al. (IDS)

The teaching of WO'502 and Rammensee et al. have been discussed, supra.

WO'502 does not teach a polypeptide comprising two or more copies of a mucin-derived polypeptides that are connected by a linker.

US Patent '137 teaches that a polypeptide comprising multimeric forms, i.e. two or more copies of active fragments of optimal zise with respect to receptor binding may be advantage over monomer forms and may enhanced the binding of said polypeptide to the receptor (see entire document, column 40 in particular). US Patent '137 further teaches that it conventional and within the skill of the art to insert a linker units into said multimer to connect monomers (see column 40 in particular).

Whitton et al. teach an advantage of using comprising an oligopeptide comprising two different epitopes organized in tandem that can bind to MHC glycoprotein over oligopeptide comprising one epitope (see entire document, Abstract in particular). Whitton et al. teach that said oligopeptide can be used in vaccine to improve vaccine coverage and efficacy.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the teaching of US Patent '137 and Whitton et al to those of WO'502 to obtain a claimed a polypeptide comprising two or more copies of a mucin-derived polypeptides that are connected by a linker.

One of ordinary skill in the art at the time the invention was made would have been motivated to do so, because a polypeptide comprising multimeric forms, i.e. two or more copies of active fragments of optimal zise with respect to receptor binding may be advantage over monomer forms may enhanced the binding of said polypeptide to the receptor and be used in vaccine to improve vaccine coverage and efficacy as taught by US Patent '137 and Whitton et al. Said polypeptide comprising multimeric form of mucin-derived polypeptide can be used in composition and vaccines taught by WO'502 . 'The strongest rationale for combining references is a recognition, expressly or impliedly in the prior art or drawn from a convincing line of reasoning based on established scientific principles or legal precedent, that some advantage or expected beneficial result would have been produced by their combination. In re Semaker. 217 USPQ 1, 5 - 6 (Fed. Cir. 1983). See MPEP 2144.

Claims 51-53 are included because it is noted that the term "optionally" , is interpreted as a linker that does not encoded by polynucleotide sequence including an enzyme restriction site or a proteosomal cleavage site.

From the combined teaching of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

14. No claim is allowed.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michail Belyavskyi whose telephone number is 571/272-0840. The examiner can normally be reached Monday through Friday from 9:00 AM to 5:30 PM. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on 571/272-0841.

The fax number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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August 9, 2004

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